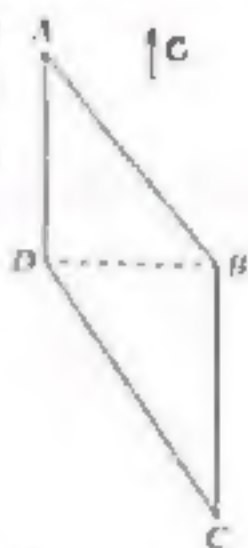
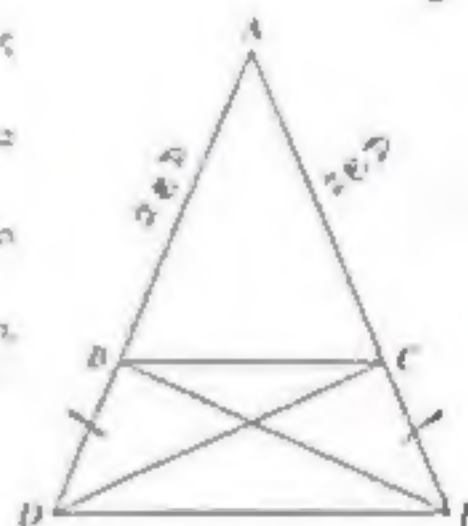


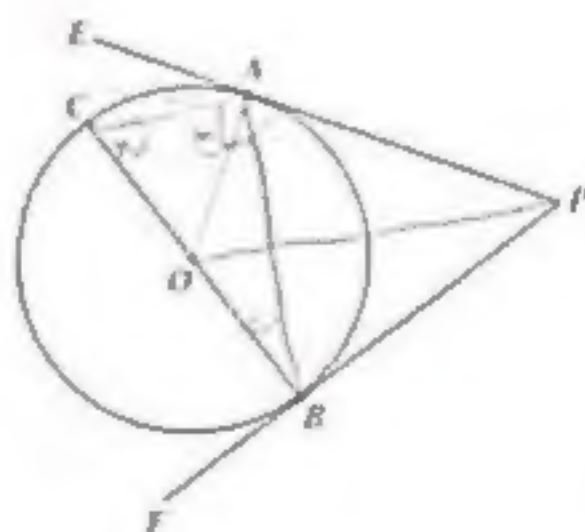
10. **ඉහත පින්තූරයේ** A, B, C හා D ලක්ෂ්‍ය එකම රේඛයේ පිහිටා ඇත. A හි ඇසින් D ද, B හි ඇසින් C ද, B හි ඇසින් C ද, $\angle ABC = 145^\circ$ ද, $AD = 20$ m ද, $BC = 42$ m ද යන කරුණු දී ඇති අතර, එකම රේඛයේ පිහිටා ඇති බව දී ඇත. $\angle BCD$ හි මාපය සොයන්න.



- [illegible]



12. $\triangle ABC$ ಕಡೆಯಲ್ಲಿ O ಕೇಂದ್ರವು $\angle C$ ಯ ಬಿಸ್ಕುಟಿಗಾಗಿ AC ಮತ್ತು AB ಕಡೆಯಲ್ಲಿ P ಮತ್ತು Q ಬಿಂದುಗಳನ್ನು ಹಾಗೂ PAE ಮತ್ತು PBF ಗಳು BC ಕಡೆಯಲ್ಲಿ E ಮತ್ತು F ಬಿಂದುಗಳನ್ನು ಹೊಂದಿವೆ.
- ಈಗ ಈ ಕೆಳಕಂಡವುಗಳನ್ನು ಸಾಬೀತುಪಡಿಸಿ.
- OA ಮತ್ತು OP ಒಂದೇ ರೇಖೆಯಲ್ಲಿವೆ.
 - $\angle CAE = \angle PBF$ ಮತ್ತು $\angle ACP = \angle OBP$ ಗಳು ಸಾಬೀತು.



O/L Maths Paper

2020 Answers

II paper

01 (i) $I = \frac{prt}{100} = 50,000 \times \frac{12}{100} \times 2 = \text{Rs } 12,000 //$

(ii) $50,000 \times \frac{115}{100} = \text{Rs } 57,500 //$

(iii) $\text{Total amount} = 50,000 + 12,000 = \text{Rs } 62,000 //$

$\left\{ \begin{array}{l} \text{Interest on Rs } 57,500 \\ \text{for 2 years} \end{array} \right\} = 57,500 \times \frac{115}{100} = \text{Rs } 66,125 //$

$66,125 - 62,000 = \text{Rs } 4,125 \text{ (Profit)}$

$4,125 > 4,000$

02 (a) (i) 1 (ii) ✓

(b) (i) $x = -1$

(ii) $-2.7 < x < 0.7$

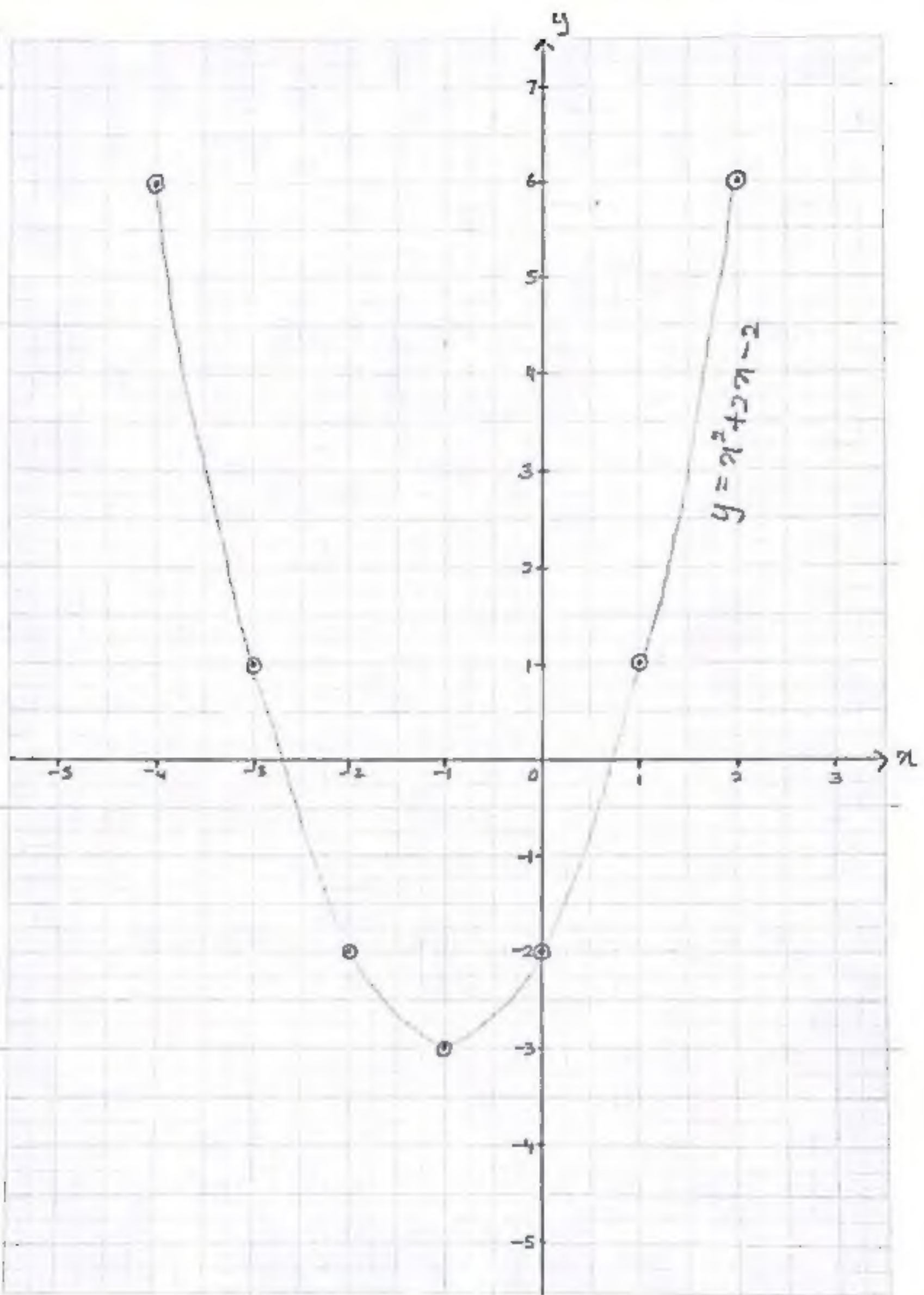
(c) $y = x^2 + 2x - 2$

$y = (x+1)^2 - 3$

Now completing $\rightarrow y = (x+1)^2 + 2 //$ (Value added = +2)

$y = (x+p)^2 + q$ $\left. \begin{array}{l} p=1 \\ q=2 \end{array} \right\} //$

(ii)



(03)

ග්‍රෑන්ඵ	පළමු අංකය (x)	ද්විතීයික (d)	තූන් (f)	f x d
131-141	136	-44	2	-88
142-152	147	-33	4	-132
153-163	158	-32	5	-110
164-174	169	-11	6	-66
175-185	180	0	8	0
186-196	191	+11	5	+55
197-207	202	+22	4	+88
208-218	213	+33	3	+99
219-229	224	+44	3	+132
			$\Sigma f = 40$	$\Sigma fd = -22$

$$(i) \text{ මධ්‍යන්‍ය} = \frac{\Sigma fd}{\Sigma f} + \text{පැයවිය යුතු මධ්‍යන්‍ය}$$

$$= \left(\frac{-22}{40} \right) + 180$$

$$= -0.55 + 180 = 179.45 // \approx \underline{179.45}$$

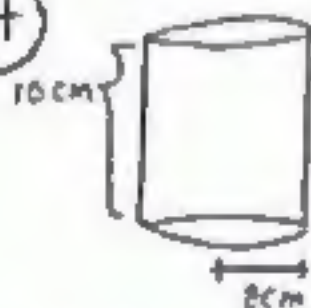
$$\text{එම 60 පිටි ලොහයක මුද්‍රා} = 179 \times 60 = \text{ලීටර් } 10,740 //$$

$$(ii) (229 \times 3) + (218 \times 3) + (207 \times 4)$$

$$= 687 + 654 + 828 = 2169 //$$

$$\underline{\underline{2169 < 2170}}$$

(04)



$$(i) \text{ පරිමාව} = \pi r^2 h$$

$$= 3.14 \times 8 \times 8 \times 10 = 2009.6 \text{ cm}^3 //$$

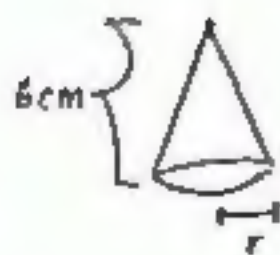
$$(ii) \text{ සුළු කළ පරිමාව} - 125.6 = \text{පරිමාව} \times 12$$

$$1884 = \frac{1}{3} \pi r^2 h \times 12$$

$$1884 = 4 \times 3.14 \times r^2 \times 6$$

$$r^2 = \frac{1884}{2 \times 3.14 \times 2 \times 6} = \frac{1884}{6.28 \times 12}$$

$$r^2 = \frac{157}{6.28} //$$



$$(iii) r^2 = \frac{157}{6.28}$$

$$r = \left(\frac{157}{6.28} \right)^{\frac{1}{2}}$$

$$\lg r = \frac{1}{2} \times \lg 1.57 \times 10^2 - \frac{1}{2} \times \lg 6.28 \times 10^0$$

$$\lg r = \frac{1}{2} \times 2.1959 - \frac{1}{2} \times 0.7980$$

$$\lg r = 1.0979 - 0.3990$$

$$\lg r = 0.6989$$

$$r = \text{antilog } 0.6989$$

$$r = 4.999 \text{ cm}$$

05 (a) $\begin{matrix} 213 \text{ ଟଙ୍କା} & - & x \\ 67 \text{ ଟଙ୍କା} & - & y \end{matrix}$ (i) $3x = y + 100$

$$3x - y = 100 \rightarrow (1)$$

$$12x + 11y = 1600 \rightarrow (2)$$

(ii) $(1) \times 4; 12x - 4y = 400 \rightarrow (3)$

$$(2) - (3); 12x + 11y - (12x - 4y) = 1600 - 400$$

$$11y + 4y = 1200$$

$$\frac{15y}{15} = \frac{1200}{15}$$

$$y = 80 //$$

y ବଦଳାଇ (1); $3x - y = 100$

$$\frac{3x}{3} = \frac{180}{3}$$

$$x = 60 //$$

$$\left. \begin{matrix} 213 \text{ ଟଙ୍କା } (x) \rightarrow 60 \\ 67 \text{ ଟଙ୍କା } (y) \rightarrow 80 \end{matrix} \right\} //$$

(iii) $\begin{matrix} 67 \text{ ଟଙ୍କା ପ୍ରତି } & \text{ଟଙ୍କା} & = & 11 \times 80 & = & \text{ଟ. } 880 // \\ 213 \text{ ଟଙ୍କା ପ୍ରତି } & \text{ଟଙ୍କା} & = & 12 \times 60 & = & \text{ଟ. } 720 // \end{matrix}$

$$\text{ଫରକ} = \text{ଟ. } 160 //$$

$$160 > 150 //$$

(b) $u = \sqrt{2gh}$

$$u^2 = 2gh$$

$$h = \frac{u^2}{2g} //$$

06) $\text{sum of } 20 = \frac{1}{2} \times \left(\frac{\text{first term} + \text{last term}}{2} \right) \times \text{no. of terms}$

$$20 = \frac{1}{2} \times [n+3 + n+5] \times n$$

$$40 = (2n+8)n$$

$$0 = 2n^2 + 8n - 40$$

$$2(n^2 + 4n - 20) = 0$$

$$n^2 + 4n - 20 = 0$$

$$n^2 + 4n - 20 = 0$$

$$n^2 + 4n + 4 = 20 + 4$$

$$\sqrt{(n+2)^2} = \sqrt{24}$$

$$n+2 = \pm 2\sqrt{6}$$

$$n = -2 \pm 2\sqrt{6}$$

$$n > 0 \therefore n = -2 + 2\sqrt{6}$$

$$n = -2 + 2(2.45)$$

$$n = -2 + 4.9$$

$$n = \underline{\underline{2.9m}}$$

$$AB = (n+3) = 2.9+3 = 5.9m //$$

$$\frac{AB}{2} = 2.95m$$

$$\frac{AB}{2} > n$$

$$\underline{\underline{2.95m > 2.9m}}$$

$$\sqrt{24} = 2\sqrt{6}$$

$$\begin{array}{r} 2 \overline{) 24} \\ \underline{2} \\ 0 \\ \underline{2} \\ 0 \\ \underline{2} \\ 0 \\ \underline{2} \\ 0 \\ \underline{2} \\ 0 \end{array}$$

07) $\begin{array}{ccccccc} 0 & \dots & \dots & 0 & \dots & \dots & 0 \end{array} \leftarrow 13$

$$\begin{array}{ccccccc} 0 & \dots & \dots & 0 & \dots & \dots & 0 \end{array} \leftarrow 15$$

$$\begin{array}{ccccccc} 0 & \dots & \dots & 0 & \dots & \dots & 0 \end{array} \leftarrow 17$$

(i) 13, 15, 17 //

(ii) $T_n = a + (n-1)d$

$$T_{28} = 13 + (28-1) \times 2$$

$$= 13 + 27 \times 2$$

$$= 13 + 54$$

$$= \underline{\underline{67}}$$

(iii) $T_n = a + (n-1)d$

$$90 = 13 + (n-1) \times 2$$

$$77 = 2n - 2$$

$$\frac{79}{2} = \frac{2n}{2}$$

$$n = 39.5$$

එළු 39.5 ක් ඇත //

(iv) $S_n = \frac{n}{2} [2a + (n-1)d]$

$$S_{40} = \frac{40}{2} [2 \times 13 + (40-1) \times 2]$$

$$= 20 (26 + 39 \times 2)$$

$$S_{40} = \underline{\underline{2060}}$$

එළු ඇතුළු $6 \rightarrow 7$

22 $\rightarrow 6$

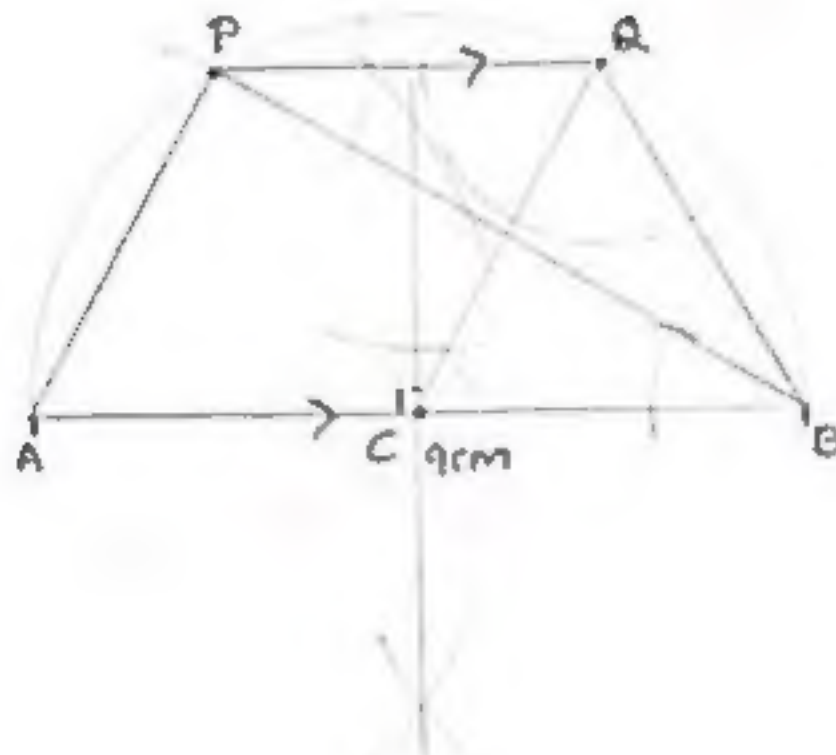
එළු ඇතුළු $6 \rightarrow 8$

23 $\rightarrow 7$

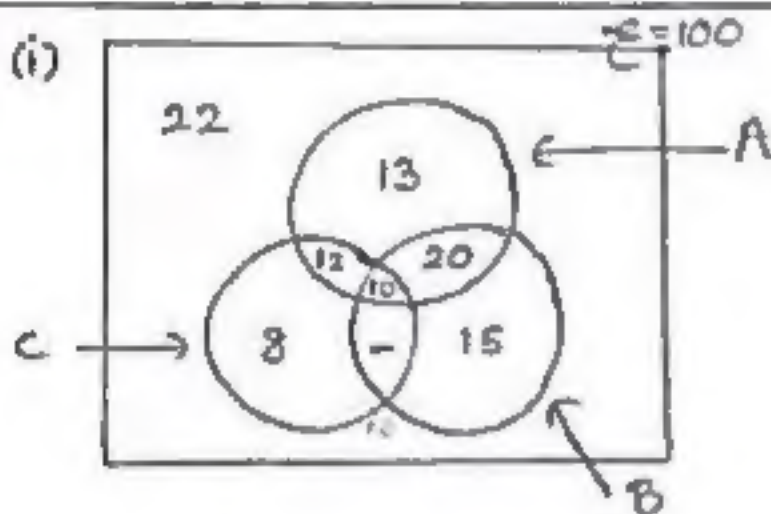
67 එළු 50 ක් වැඩි //

(08) (i) (ii) (iii) (iv)

(v) $\hat{P} \hat{Q} \hat{B} = 120^\circ$



09 (i)

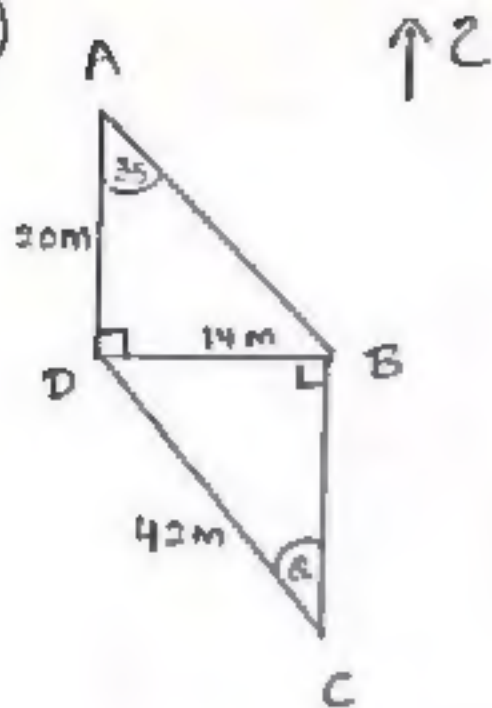


(ii) 12 //

(ii) 13/

(iv) 22,

(10)



$$\triangle ABD \Delta; \quad \tan 35 = \frac{x}{20}$$

$$0.7002 = \frac{DB}{20}$$

$$DB = 0.7002 \times 20$$

$$DB = 14.004 \text{ m} //$$

$$DB \approx 14 \text{ m} //$$

$$\triangle BCD \Delta; \quad \sin Q = \frac{14}{42}$$

$$Q = \sin^{-1} 0.3333$$

$$Q = 19^\circ 28' //$$

(11) (i) $\angle ABC = \angle ACB$ ($\triangle ABC$ Δ ల పట్టికలకు సమాన)

$$180^\circ - \angle ABC = 180^\circ - \angle ACB$$

$$\angle CBD = \angle BCE \text{ (కుంభాకృతం)}$$

$$\triangle CBD \Delta \text{ and } \triangle BCE \Delta$$

$$BC = BC \text{ (సాధారణం)}$$

$$\angle CBD = \angle BCE \text{ (కుంభాకృతం వలన సమానం)}$$

$$BD = CE \text{ (పట్టికలకు)}$$

$$\therefore \triangle CBD \Delta \cong \triangle BCE \Delta \text{ (క.స.ప.స.)}$$

$$(ii) AB + BD = AC + CE$$

$$AD = AE \quad \therefore ADE \text{ పట్టికలకు} //$$

$$\angle BDC = \angle BEC \text{ (కుంభాకృతం వలన సమానం)}$$

సరే కోణ, పట్టికలకు సమానం వలన కోణ సమానం, నిజం ప్రకటించబడినది $BC \parallel DE$

$$\therefore \angle ABC = \angle ADE \text{ (సమాన కోణం)}$$

$$(iii) \triangle ABC \Delta \text{ and } \triangle ADE \Delta$$

$$\angle A = \angle A$$

$$\angle ABC = \angle ADE$$

$$\angle ACB = \angle AED$$

$$\underline{2BD = AB}$$

$$\therefore \triangle ABC \Delta \text{ and } \triangle ADE \Delta \text{ సమానం} //$$

$$\frac{AB}{AD} = \frac{BC}{DE}$$

$$\frac{2BD}{2ED} = \frac{BC}{DE}$$

$$\rightarrow \underline{3BC = 2DE}$$

(i) OP is the perpendicular bisector of BC .

(ii) $OA \perp PB = OB \perp PA = 90^\circ$
[\because \angle at center subtended by the same chord are equal]

∴ OAPB එකම චතුරස්‍රයයි.
[එ කමණ්ඩු එකම විෂයය ඇති] //

১১০ $\angle AOB = 2\alpha$

$$P\hat{O}E = \pi$$
$$E\hat{A}_C = 90^\circ - \alpha$$
$$\therefore \underline{EAC = OAB} \text{ (vertically opposite angles)}$$